

CLAIMS

1. A process for producing a sintered aluminum nitride furnished with via holes, comprising providing an aluminum nitride molding having through-holes for via hole formation and through-holes for formation of dummy via holes not used for electrical connection, filling the through-holes for via hole formation and the through-holes for dummy via hole formation with a conductive paste and firing the aluminum nitride molding and conductive paste,

wherein the aluminum nitride molding is furnished with the through-holes for via hole formation and the through-holes for dummy via hole formation so that the through-holes for via hole formation having been filled with the conductive paste and the aluminum nitride molding respectively exhibit a firing shrinkage factor (X_v , %) and a firing shrinkage factor (X_s , %) whose difference, $X_v - X_s$, is in the range of -1.0 to 9.5%.

2. A process for producing a sintered aluminum nitride furnished with via holes, comprising providing an aluminum nitride molding having through-holes for via hole formation and through-holes for formation of dummy via holes not used for electrical connection, filling the through-holes for via hole formation and the through-holes for dummy via hole

formation with a conductive paste and firing the aluminum nitride molding and conductive paste,

wherein at least one of the through-holes for via hole formation is in such a highly isolated state that,

5 therearound, other through-holes for via hole formation are not densely present, and wherein at least one of the through-holes for dummy via hole formation is formed around the through-hole for via hole formation of said highly isolated state.

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3. The process as claimed in claim 2, wherein, within a radius of 5.0 mm from a center of the through-hole for via hole formation of said highly isolated state, there are other through-holes for via hole formation whose volumes sum into 15 0.9% or less of a whole volume within the radius.

4. The process as claimed in claim 3, wherein, within a radius of 5.0 mm from a center of the through-hole for via hole formation of said highly isolated state, through-holes 20 for dummy via hole formation and other through-holes for via hole formation are formed so that their volumes sum into 1 to 6% of a whole volume within the radius.

Sub A₃₁ > The process as claimed in any of claims 1 to 4, wherein through-holes for dummy via hole formation are formed in a scrap zone within the sintered aluminum nitride.

5 6. The process as claimed in claim 5, wherein, after the firing, the scrap zone is cut off from the sintered aluminum nitride.

Sub A₃₂ > 7. The process as claimed in any of claims 1 to 6, wherein 10 a composition comprising 100 parts by weight of a refractory metal, 2 to 10 parts by weight of powdery aluminum nitride and 2 to 9 parts by weight of an organic vehicle is used as the conductive paste.

15 8. The process as claimed in claim 7, wherein the aluminum nitride molding, after the filling of the through-holes for via hole formation and through-holes for dummy via hole formation with the conductive paste, is dewaxed so that the 20 aluminum nitride molding exhibits an internal residual carbon ratio of 800 to 3000 ppm, then fired at 1200 to 1700°C and further fired at 1800 to 1950°C.

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